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EXAMINER	
SALMON, KATHERINE D	

ART UNIT	PAPER NUMBER
1634	

MAIL DATE	DELIVERY MODE
10/04/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/821,657	WADA ET AL.	
	Examiner	Art Unit	
	KATHERINE SALMON	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-4, 8-14, 16-27, 29, 31-32, 35, 37-39, 41-44, 53, 55-58, 66, 86, 88-89, 91-92, 95-96, 98-114* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 1,3,4,8-14,16-27,29,31,32,35,37-39,41-44,53,55-58,66,86,88,89,91,92,95,96 and 98-114.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/13/2010 has been entered.

2. Claims 1, 3-4, 8-14, 16-27, 29, 31-32, 35, 37-39, 41-44, 53, 55-58, 66, 86, 88-89, 91-92, 95-96, 98-114 are pending. Claims 2, 5-7, 15, 28, 30, 33-34, 36, 40, 45-52, 54, 59-65, 67-85, 87, 90, 93-94, 97, and 115-120 have been canceled.

3. The following rejections are newly applied. This case is NONFINAL.

Withdrawn Rejections

4. The rejection of the claims made in sections 7-16 of the previous office action mailed 10/14/2009 have been withdrawn based upon amendments to the claims.

Interview Summary

5. The reply filed on 7/27/2010 is a complete or accurate record of the substance of the phone interview of 7/14/2010.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1, 3-4, 8-9, 11-14, 16-22, 27, 29, 31-32, 35, 37, 43-44, 53, 55-58, 86, 88-89, 91-92, 95, 101-102, 105-106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al. (WO 02/082083 A1 published 10/17/2002) in view of Janssen et al. (US Patent 5611903 March 18, 1997), Kaniansky et al. (Analytical chemistry 2000 Vol. 72 p. 3596), and Kautz et al. (Journal of American Chemistry Society 2001 Vol. 123 p. 3159).

It is noted that Kawabata et al, Janssen et al, and Kaniansky et al have been previously cited on a PTO 892. Citations are from the National Stage (US Patent

Application 2004/0144649 July 29, 2004). The national stage is deemed an English language translation of the PCT.

With regard to Claim 1, Kawabata et al. teaches a method of measuring a target (detecting an analyte) (Abstract). Kawabata et al. teaches a target substance (analyte) is reacted with a nucleic acid chain binding affinity substance marker (e.g. an affinity molecule conjugated with a charged particle) (p. 2 paragraph 0013). Kawabata et al. teaches the separation of the complex from nucleic acid chain-binding affinity substances not involved in the formation of the complex (separation of the complex and unbound affinity molecule) (abstract and p. 2 paragraph 13-14). The nucleic acid chain would be considered the charged molecule since nucleic acid has a negative charge.

As such Kawabata et al. teaches contacting the sample containing the analyte and one or more affinity molecule/charged carrier molecule conjugates.

Kawabata et al. teaches that the sample containing the analyte, and the one or more affinity molecule/charged carrier (figure 1) also comprises an inhibitor (paragraph 191). Kawabata et al. teaches that these inhibitors are added to protect the complexes from nuclease (paragraph 191). Kawabata et al. teaches that these inhibitors include heparin (e.g. first polyanion) (paragraph 191). This polyanion therefore reduces the interferences of the nuclease which might be present in the solution.

With regard to step ii, Kawabata et al. does not teach that the complex is concentrated in the presence of a second polyanion using a concentration channel in a microfluidic device, the concentration channel having at least one microscale dimension of between about 0.1 and about 500 microns.

With regard to step iii, the instant specification does not define the term microfluidic device. Therefore the term is broadly interpreted as any microscopic component designed to handle liquid flow. Kawabata et al. teaches a method for separation by electrophoresis (p. 2 paragraph 15). Kawabata et al. however does not teach a polyanion. Kawabata et al. teaches separating the complex using capillary electrophoresis (e.g. a microfluidic device) with a channel diameter preferably 1 to 200 microns (p. 10 paragraph 93). The capillary electrophoresis in Kawabata et al is interpreted to be a microfluidic device. Kawabata et al. teaches a method for measuring (detecting) a target (analyte) (abstract). Therefore Kawabata teaches electrophoretically separating the complex; however, Kawabata et al. does not teach that this separation occurs in the presence of a third polyanion.

The instant specification does not define the term microfluidic device. Therefore the term is broadly interpreted as any microscopic component designed to handle liquid flow. Kawabata et al. teaches a method for separation by electrophoresis (p. 2 paragraph 15). Kawabata et al. however does not teach a polyanion. Kawabata et al. teaches separating the complex using capillary electrophoresis (e.g. a microfluidic device) with a channel diameter preferably 1 to 200 microns (p. 10 paragraph 93). The capillary electrophoresis in Kawabata et al is interpreted to be a microfluidic device. Kawabata et al. teaches a method for measuring (detecting) a target (analyte) (abstract).

Although Kawabata et al. does not teach concentrating the sample after it is contacting with the first polyanion, the art teaches that concentrating a sample before

electrophoresis ensures that more analyte is detected. With regard to step ii, Kaniansky et al. teaches a method of using a capillary electrophoresis chip with a two separation channel coupling (Abstract). Kaniansky et al. teaches using ITP (e.g. Concentration channel) as a concentration pretreatment of the analyte (Abstract). Therefore Kaniansky et al. teaches a microchannel fluidically connected to a concentration channel. The claim requires at least one microscale dimension of between about 0.1 and 500 microns. The limitation does not require that the concentration channel be that size but rather the microfludiic device should have a microscale dimension of between about 0.1 and 500 microns. Kawabata et al. teaches separating the complex using capillary electrophoresis with a channel diameter preferably 1 to 200 microns (p. 10 paragraph 93) as such the ITP channel when placed in the device would be of equal size. ITP is based on the mobility differences of the solution placed into the column, therefore, dependent on the size and charge of the components in the solution including the charged carrier, the components either get concentrated in a solution or trapped in the membrane. Therefore ITP utilized the charge of the complex (e.g. the charged carrier, the analyte, and the antigen) to move through the membrane whereas other components in the sample do not.

Although Kanisakay et al does not teach the presence of a second polyanion in the ITP concentration channel, it was well known in the art that polyanions could be used in such a channel.

Kautz et al. teaches a method of concentrating a sample by capillary isotachophoresis. Kautz et al. teaches that the walls of the capillary need to be coated

with polyvinyl alcohol to minimize electoosmotic flow which degrades the boundaries between analyte bands (p. 3159 2nd column 2nd paragraph).

With regard to step iii, the art teaches that adding a polyanion during electrophoresis separation process. Janssen et al. teaches adding a polyanion to a capillary buffer in a capillary electrophoresis detection method (abstract). Janssen et al. teaches that the polyanion can be a polysaccharide derivative, a synthetic polymer derivative, a polyacidic amino acid, a polynucleotide, a polyphosphate, a polyphosphonate, a polyphosphoric acid, or heparin (column 9 lines 15-20 and table 2). Janssen et al teaches the use of a polyanion in a buffer allows for higher velocities and shorter migration times of complexes being separated (column 8 lines 1-6). Therefore this third polyanion would reduce interferences because the migration times would be shorter.

Therefore the combination of art cited above teaches all the limitations of Claim 1.

With regard to Claim 9, Kawabata et al. teaches a nucleic acid chain affinity substance is labeled with a marker (Figure 2).

With regard to Claims 11, 12, and 13, Kawabata et al. teaches the binding of “protein” and “peptide chain”; “antigen” and “antibody”; “sugar chain” and “lectin”; “enzyme” and “inhibitor”; and “receptor” and “ligand” (p. 5 paragraph 55).

With regard to Claims 14, 16-17, Kawabata et al. teaches the charged carrier molecule (referred to as nucleic acid chain binding affinity substance) is a nucleic acid chain (anionic) (p. 4 paragraph 50).

With regard to Claims 18, Kawabata et al. teaches the charged carrier is a nucleic acid chain (nucleotide chain, DNA) (p. 4 paragraph 50). Kawabata et al. teaches the nucleic acid chain used may be prepared by chemical synthesis (synthetic) (p. 4 paragraph 52).

With regard to Claims 19-21, Kawabata et al. teaches a method of labeling the nucleic acid with a linker, such as, Sulfo-SMPB (sulfosuccinimidyl) (succinimide group) and a marker (p. 7 paragraph 64, 66, and 67).

With regard to Claims 22, Kawabata et al teaches a nucleic acid chain attached to an affinity substance and labeled with a marker (Figure 2). The conjugate is the nucleic acid chain attached to the affinity substance. Kawabata et al. teaches the nucleic acid chain is labeled (p. 7 paragraph 64, 66, and 67) therefore when complexed to the charged molecule the affinity molecule is labeled.

With regard to Claim 27, Kawabata et al. teaches the use of fluorescent dyes and radioactive tracers (p. 6 paragraph 62).

With regard to Claim 29, Kawabata et al. teaches the separation media can be comprised of polyethylene glycol, polyacrylamide, polyethylene oxide, or polyvinylpyrrolidone (p. 9 paragraph 85).

With regard to Claim 35, Kawabata et al. teaches separating the complex using capillary electrophoresis with a channel diameter preferably 1 to 200 microns (p. 10 paragraph 93).

With regard to Claim 37, Kawabata et al. teaches a method of measuring a target (detecting an analyte) (Abstract). Kawabata et al. teaches a target substance (analyte) is reacted with a nucleic acid chain binding affinity substance marker (e.g. an affinity molecule conjugated with a charged particle) (p. 2 paragraph 0013). The conjugate has a detectable marker (p. 2 paragraph 13). Kawabata et al. teaches the separation of the complex from nucleic acid chain-binding affinity substances not involved in the formation of the complex (separation of the complex and unbound affinity molecule) (abstract and p. 2 paragraph 13-14). The nucleic acid chain would be considered the charged molecule and nucleic acid have a negative charge.

Kawabata et al. teaches a method for separation by electrophoresis (p. 2 paragraph 15). Kawabata et al. however does not teach a polyanion. Kawabata et al. teaches separating the complex using capillary electrophoresis with a channel diameter preferably 1 to 200 microns (p. 10 paragraph 93). Kawabata et al. teaches a method for measuring (detecting) a target (abstract).

With regard to Claim 43, Kawabata et al. teaches targets comprising serum, plasma, urine, feces, and environmental samples (p. 9 paragraph 85).

With regard to Claim 44, Kawabata et al. teaches a target comprising AFP, FSH, TSH, LH, HIV, CA10-19, CA125, PSA, or T4 (p. 5 paragraph 56).

With regard to Claim 86, Kawabata et al. teaches the separation media can be comprised of polyethylene glycol, polyacrylamide, polyethylene oxide, or polyvinylpyrrolidone (p. 9 paragraph 85).

With regard to Claim 92, Kawabata et al. teaches separating the complex using capillary electrophoresis with a channel diameter preferably 1 to 200 microns (p. 10 paragraph 93).

With regard to Claim 95, Kawabata et al. teach at least two conjugates (e.g. affinity and nucleic acid marker) which bind to the target (analyte) at different sites (Figure 4).

With regard to Claims 101-102, 105-106, Kawabata et al. teaches that the sample containing the analyte, and the one or more affinity molecule/charged carrier (figure 1) also comprises a inhibitor (paragraph 191). Kawabata et al. teaches that these inhibitors are added to protect the complexes from nuclease (paragraph 191). Kawabata et al. teaches that these inhibitors include heparin (e.g. first polyanion) (paragraph 191). This polyanion therefore reduces the interferences of the nuclease which might be present in the solution.

As stated above Kaniansky et al teaches a method of concentrating samples before electrophoresis.

With regard to Claims 53, Kaniansky et al. teaches a method of using a capillary electrophoresis chip with a two separation channel coupling (Abstract). Kaniansky et al. teaches using ITP (e.g. Concentration channel) as a concentration pretreatment of the analyte (Abstract). Therefore Kaniansky et al. teaches a microchannel fluidically

connected to a concentration channel. The claim requires at least one microscale dimension of between about 0.1 and 500 microns. The limitation does not require that the concentration channel be that size but rather the microfludiic device should have a microscale dimension of between about 0.1 and 500 microns. Kawabata et al. teaches separating the complex using capillary electrophoresis with a channel diameter preferably 1 to 200 microns (p. 10 paragraph 93).

With regard to Claim 55-56, ITP is based on the mobility differences of the solution placed into the column, therefore, dependent on the size and charge of the components in the solution including the charged carrier, the components either get concentrated in a solution or trapped in the membrane. Therefore ITP utilized the charge of the complex (e.g. the charged carrier, the analyte, and the antigen) to move through the membrane whereas other components in the sample do not.

With regard to Claims 57-58, Kaniansky et al. teaches using isotachophoresis (ITP).

As stated above, Janssen et al. teaches a method which using polyanions in the electrophoresis separation on an analyte.

With regard to claims 3-4, Kawabata et al. teaches that the sample containing the analyte, and the one or more affinity molecule/charged carrier (figure 1) also comprises an inhibitor (paragraph 191). Kawabata et al. teaches that these inhibitors are added to protect the complexes from nuclease (paragraph 191). Kawabata et al. teaches that these inhibitors include heparin (e.g. first polyanion) (paragraph 191). Kautz et al. teaches that capillary tubes of ITP can be coated with polyvinyl (e.g. 2nd polyanion) (p.

3159 2nd column 2nd paragraph). Janssen et al. teaches that the polyanion (3rd polyanion) can be a polysaccharide derivative, a synthetic polymer derivative, a polyacidic amino acid, a polynucleotide, a polyphosphate, a polyphosphonate, a polyphosphoric acid, or heparin (column 9 lines 15-20 and table 2). Further,

With regard to claim 8, Janssen et al. teaches that the polyanion comprises heparin sulfate (table 2).

With regard to Claims 31 and 32, Janssen et al. teaches a method wherein the polyanion (third polyanion) comprises about 1% by volume of the media in the capillary (column 10 lines 4-5).

With regard to Claims 88-89, Janssen et al. teaches a method wherein the polyanion comprises about 1% by volume of the media in the capillary (column 10 lines 4-5).

With regard to claim 91, Janssen et al. teaches that polyanions comprise about 1% by volume and that one of the polyanions can be heparin sulfate (Column 10 lines 4-5 and Table 2).

Therefore it would be prime facie obvious to one of ordinary skill in the art at the time the invention was made to modify method of detecting or identifying an analyte of interest in a sample of Kawabata et al. to include a step of concentrating with a second polyanion (Kaniansky et al.) and further provide a third polyanion in the electrophoretically separating step (Janssen et al.). The ordinary artisan would be motivated to modify the method to concentrate the analyte because Kaniansky et al. teaches using an ITP concentration pretreatment quantified test analytes by 1-2% RSD

(Abstract). Kaniansky et al. teaches a well-defined ITP concentration of the analyte can be integrated into the separation method of a capillary channel chip (Abstract). By using the ITP concentration channel the ordinary artisan can increase the concentration of the analyte in the solution and thereby increase the detection and concentration of the analyte. Further, Kautz et al. teaches that this capillary should be coated with a polyanion to reduce electroosmotic flow. Kautz et al. teaches that the walls of the capillary need to be coated with polyvinyl alcohol to minimize electoosmotic flow which degrades the boundaries between analyte bands (p. 3159 2nd column 2nd paragraph). Therefore adding the second anion will prevent degradation of the boundaries between the analyte bands. The ordinary artisan would have been motivated to modify the method of detecting or identifying an analyte of interest in a sample of Kawabata et al. to include in the step of providing a microfluidic device a separation channel which has a polyanion (e.g. the third polyanion) in a separation buffer as taught by Janssen et al., because Janssen et al teaches the use of a polyanion in a buffer allows for higher velocities and shorter migration times of complexes being separated (column 8 lines 1-6) therefore the use of polyanions allows for better elution of the analyte from complexes.

8. Claim 66 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al. (WO 02/082083 A1 published 10/17/2002), Janssen et al. (US Patent 5611903 March 18, 1997), Kaniansky et al. (Analytical chemistry 2000 Vol. 72 p. 3596), and Kautz et al. (Journal of American Chemistry Society 2001 Vol. 123 p. 3159) as

applied to Claims 1, 3-4, 8-9, 11-14, 16-22, 27, 29, 31-32, 35, 37, 43-44, 53, 55-58, 86, 88-89, 91-92, 95, 101-102, 105-106 and in further view of Brown et al. (The journal of biological chemistry 1994 vol 269 p. 26801).

It is noted that Brown et al. was previously cited on an 892.

Kawabata et al., Janssen et al., Kaniansky, and Kautz teach a method detecting or identifying an analyte of interest in a sample by electrophoretically separating an analyte coupled to an affinity/charged conjugate in a separation buffer comprising a polyanion. The combination of Kawabata et al., Janssen et al., Kaniansky, and Kautz teaches a step of an affinity molecule/charged carrier molecule in which the charged carrier molecule comprises an oligonucleotide attached to a label. Kawabata et al., Janssen et al., Kaniansky, and Kautz do not teach that the synthetic sequence (e.g. oligonucleotide) comprises phosphorothioate.

With regard to Claim 66, Brown et al. teaches a method of mobility shift assays which uses phosphorothiate-modified oligonucleotides (abstract). Brown et al. teaches that phosphorothioate modified oligonucleotides exhibit greater protein binding than unmodified oligonucleotides (abstract).

Therefore it would be prima facie obvious to modify the method of Kawabata et al. , Janssen et al., Kaniansky, and Kautz to further include a modification of the oligonucleotide which is attached to the label in the charged carrier molecule of Kawabata et al. to include phosphorathiate modification of Brown et al. The ordinary artisan would be motivated to modify the oligonucleotide used in the method of Kawabata et al. , Janssen et al., Kaniansky, and Kautz to include phosphorothiate

because Brown et al. teaches phosphorothioate modified oligonucleotides exhibit greater protein binding than unmodified oligonucleotides (abstract). Therefore phosphorothioate modified oligonucleotides have the potential of greater binding efficiency of the affinity molecule/charged carrier molecule conjugate to the analyte in the method of Kawabata et al. , Janssen et al., Kaniansky, and Kautz.

9. Claims are 10, 23-26, 38-39, 41-42, 96, 98-100, 103-104, 108-114 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al. (WO 02/082083 A1 published 10/17/2002), Janssen et al. (US Patent 5611903 March 18, 1997), Kaniansky et al. (Analytical chemistry 2000 Vol. 72 p. 3596), and Kautz et al. (Journal of American Chemistry Society 2001 Vol. 123 p. 3159) as applied to Claims 1, 3-4, 8-9, 11-14, 16-22, 27, 29, 31-32, 35, 37, 43-44, 53, 55-58, 86, 88-89, 91-92, 95, 101-102, 105-106 and in further view of Hosokawa et la. (European Patent Application EP1061370 A2 Date of Publication 12/20/200).

It is noted that Hosokawa et al. was previously cited on an 892.

Kawabata et al., Janssen et al., Kaniansky, and Kautz teach a method detecting or identifying an analyte of interest in a sample by electrophoretically separating an analyte coupled to an affinity/charged conjugate in a separation buffer comprising a polyanion. The combination of Kawabata et al., Janssen et al., Kaniansky, and Kautz however does not teach a contacting step wherein one or more non-conjugated affinity molecules have affinity against the analyte.

With regard to Claim 10, Hosokawa et al. teaches a method for determining an analyte in a sample (e.g. detection of CEAs) (abstract). Hosokawa et al. teaches a method of binding an analyte to a charged carrier molecule because the CEA binding antibody would contain a charge. Hosokawa et al. teaches a labeled competitive CEA binding antibody (labeled affinity molecule), which is complexed to the analyte bound to the CEA binding antibody-insoluble carrier conjugate (p. 7 lines 25-35). Hosokawa et al. teaches that the charged carrier molecule bound analyte is formed by an insoluble carrier, a specific sugar chain binding protein (e.g. an analyte extrinsic to the sample), the analyte (e.g. CEAs) and a labeled CEA binding antibody (p. 6 lines 10-15). Therefore Hosokawa et al. suggests that analytes can be separated from non-conjugated affinity molecules based upon the size and charge (e.g. labeled complexes would separate out before the non-conjugated affinity molecules).

With regard to Claims 23-26, Kawabata et al teaches a nucleic acid chain attached to an affinity substance and labeled with a marker (Figure 2). The conjugate is the nucleic acid chain attached to the affinity substance. Kawabata et al. teaches the nucleic acid chain is labeled (p. 7 paragraph 64, 66, and 67) therefore when complexed to the charged molecule the affinity molecule is labeled.

With regard to Claim 38, Kawabata et al. teaches that the conjugate is labeled by a marker (p. 7 paragraph 64, 66, and 67). The combination of Hosokawa et al. and Kawabata et al. suggested that electrophoretically the labeled marker complexed will separate from the nonlabled molecules and as such one can measure the amount of the claimed analyte in the sample.

With regard to Claim 39 and 42, the combination cited above would teach the method steps. Specifically the combination of Kawabata et al., Janssen et al., Kaniansky, and Kautz teach the steps of contacting in the presence of a first polyanion, concentrating in the presence of a second, and performing electrophoresis in the presence e of the third. Hosokawa et al. teaches a method of binding an analyte to a charged carrier molecule because the CEA binding antibody would contain a charge (see discussion of claim 1). These polyanion have shown to reduce interference so that the analyte of the sample can be determined. Hosokawa et al. teaches a labeled competitive CEA binding antibody (labeled affinity molecule), which is complexed to the analyte bound to the CEA binding antibody-insoluble carrier conjugate (p. 7 lines 25-35). Hosokawa et al. teaches that the charged carrier molecule bound analyte is formed by an insoluble carrier, a specific sugar chain binding protein (e.g. an analyte extrinsic to the sample), the analyte (e.g. CEAs) and a labeled CEA binding antibody (p. 6 lines 10-15). Therefore Hosokawa et al. suggests that analytes can be separated from non-conjugated affinity molecules based upon the size and charge (e.g. labeled complexes would separate out before the non-conjugated affinity molecules).

With regard to Claim 41, the steps contain steps to electrophoretically separate the complexes (conjugated and non-conjugated) from one another. Hosokawa et al. Teaches that these labeled analytes and affinity molecules bind so that different combinations are formed (e.g. labeled, nonlabled, conjugated, non-conjugated). Herein in the instant case, the methodology of Kawabata et al. teaches a step of electrophoresis in which in the presence of a polyanion (Jannes) different combinations

of analytes can be separated based on size. Therefore these combinations would be separated and can be distinguished based on both size and label.

With regard to Claims 96, 98, and 99-100, Kawabata et al. teaches a method for separation by electrophoresis which comprising forming 2 or more species of complexes (e.g. conjugates) (p. 3 paragraph 19). Kawabata et al. teaches that these two or more conjugates have an affinity only for specific targets in the analyte (p. 3 paragraph 20).

With regard to CLiams103-104, and 180-114 as stated in Claim 1, Kawabata et al. teaches adding a first polyanion. Therefore the solution would have one or more conjugates and one or more non conjugates in the presence of a polyanion. As such the combination of art presented above would have a solution of a first polyanion, an analyte which is labeled, and two or more conjugates have an affinity only for specific targets in the analyte

Therefore it would be prima facie obvious to one of ordinary skill in the art to modify the method of Kawabata et al. , Janssen et al., Kaniansky, and Kautz to further include competitive non conjugates as taught by Hosokawa et al. The ordinary artisan would be motivated to use additional non-conjugates in order to separate out the analytes that are not labeled with the complex. In this way the ordinary artisan would be able to separate a sample that is pure from other complexes by electrophoresis separation based on size and label.

Conclusion

10. No Claims are allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KATHERINE SALMON whose telephone number is (571)272-3316. The examiner can normally be reached on Monday - Friday 9AM-530PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Nguyen can be reached on (571) 272-0731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine Salmon/
Examiner, Art Unit 1634